Evidence of Unconscious Bias – Best Practices and Guidelines for LDEO Search Committees*

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This document is a compilation of resources for search committees and is aimed at i) providing guidelines to search committees; and ii) shedding light on some unconscious biases that exist among both men and women in academic settings. Section I provides information on some of the common biases that are prevalent in the workplace. Section II provides some guidelines on conducting an effective and diverse search. Please note that this document should be reviewed carefully *before* evaluating any applicants.

Section I: Evidence of Bias in Academic Settings

Unconscious Bias:

Both men and women hold unconscious biases that are rooted in gender constructs, stereotypes, and gender schemas (Valian, 1998). Cognitive science and psychology has shown that the brain employs these biases to make sense of complex situations (Freedman & Phillips, 1988). These biases disproportionately affect women and minorities and are apparent in the following:

- **Hiring:** A study by researchers at Yale University showed that science faculty's subtle gender biases favored male students. In a randomized double-blind study, science faculty rated the application materials of a student – who was randomly assigned either a male or female name – for a lab manager position. Faculty participants rated the male applicant as significantly more competent and hireable than the (identical) female applicant. The starting salary offered was also higher. The gender of the faculty did not did not affect the responses, i.e. both male and female faculty were equally likely to exhibit bias against the female student. (Moss-Racusin et al, 2012)
- **Salaries:** A recent report in Nature indicated that female scientists still earn between 25% and 40% less than their male counterparts (Shen, 2013). Studies also show that salaries for women don't progress as quickly as salaries for men (Valian, 2005). Also, there is widespread evidence that women ask for less than their male colleagues (Babcock & Laschever, 2003).
- **Letters of Recommendation:** A 2003 study of 312 recommendation letters for successful medical faculty applicants at a large American medical school found that letters for females

* Partially adapted from ADVANCE at the Earth Institute at Columbia University

differed systematically from those for male applicants. Specifically, letters for women were shorter, contained more "grindstone adjectives" such as "hardworking" and "diligent," contained twice as many doubt-raisers, and were less likely to include stand-out adjectives such as "brilliant" and "superb". In addition, letters for women emphasized teaching whereas those for men emphasized research abilities (Trix & Psenka, 2003). A 2016 study on more than 1,200 letters of recommendation in the geosciences found that regardless of the gender of the letter writer, male applicants were significantly more likely to be receive outstanding letters compared to female applicants (Dutt et al, 2016).

- **Agentic vs. Communal Differences:** A 2009 study investigated differences in agentic and communal characteristics in letters of recommendations for men and women for academic positions, and whether such differences influenced selection decisions in academia. The results showed that women were described as more communal and less agentic than men; and that communal characteristics are negatively related to hiring decisions in academia that are based on letters of recommendation (Madera et al, 2009).

- **Performance Evaluation:** Using data from symphony orchestra auditions, a study shows that with the introduction of blind auditions, the number of women hired has increased fivefold, and the probability that a woman will advance from preliminary rounds has increased by 50%. Researchers maintain that blind audition procedures alone accounted for a significant increase in the proportion of women musicians hired into top-tier American symphonies (Goldin and Rouse, 2000). A 2016 study found that a professor with a male name received higher teaching evaluations than an identical professor with a female name, and that this bias was not limited to subjective aspects such as how good the students believed the teacher was, but also for objective questions such as whether the teacher returned homework assignments on time (Boring et al, 2016).

- **Contributorship:** A 2016 study found that women disproportionately perform the labor and experimental work of producing science – such as pipetting and centrifuging – while while men are more likely to credited for the bigger picture such as conceiving ideas and analyzing data (Sugimoto et al, 2016).

- **Entrepreneurial Ventures**: In a study conducted by Harvard Business School, Wharton, and MIT Sloan, researchers found that investors preferred entrepreneurial ventures pitched by a man over an identical venture pitched by a woman by a rate of 68% to 32%. Investors found the male pitches more "persuasive, logical, and fact-based" than the *identical* female pitches (Brooks et al., 2014).

- **Curriculum Vitae:** Even psychologists are more likely to hire a male applicant than a female applicant with an identical record. In a 1999 study 238 psychologists were presented with one of four versions of a CV (female job applicant, male job applicant, female tenure candidate, and male tenure candidate). All the CVs came from a real-life scientist at two different stages in her career, but the names were changed to traditional

male and female names. The study found that both men and women were more likely to select a male applicant than a female applicant with an identical record. Both men and women also reported that the male applicant had more teaching, research and service experience compared to the female applicant with an identical record (Steinpres et al., 1999)

- **Stereotyping:** In a 2014 study found that without any information other than a candidate's appearance (making gender clear) both male and female subjects were twice as likely to hire a man than a woman to do an arithmetic task that, on average, both genders perform equally well. This discrimination survived if performance was self-reported because men had a greater tendency to boast about their performance. This discrimination was reduced but not eliminated by providing full information about previous performance on the task. The study showed that implicit stereotypes were responsible for the initial average bias in sex-related beliefs and for a bias in updating expectations when performance is self-reported (Reuben et al., 2014). In another study (Davies et al., 2005) it was found that due to the negative stereotype of aggressiveness associated with women leaders, women avoid leadership opportunities to sidestep the spotlight of this stereotype. In an earlier study (Martell, 1991) it was found that evaluators who are busy, distracted, or under time pressure tend to give women lower ratings than men for the same written evaluations of performance, i.e. in such circumstance evaluators are more likely to rely on stereotypes.

- **Funding Success:** A study of 128 applicants for a prestigious grant at a Dutch institution found that males and females were evaluated differently, and that these differences varied across disciplines. Gender disparities were especially pronounced in biology and the Earth sciences (Brouns, 2000). Following a US congressional directive to assess differences in the distribution of external federal research funding, using the period 2001-2003 researchers found that female applicants for NIH grants received only 63% of the funding that male applicants received, with underrepresentation of women among the top 1% award recipients accounting for only one-third of this discrepancy (RAND, 2005).

- **Publications:** To answer the question of why women account for 44% of PhDs but 7% of professional positions, a study of postdoctoral fellowships awarded in Sweden found that peer reviewers gave female applicants lower scores than male applicants who displayed the same level of scientific productivity. The study also found that women needed 2.5 times more publications as men to achieve the same rating as men on scientific competence. The analysis also revealed that knowing someone on the review panel improved their rating of scientific competence (Wenneras and Wold, 1997).

- **Negotiations**: In a study done by researchers at Harvard and Carnegie Mellon, women who negotiated a higher salary were perceived as being more difficult and less nice to work with compared to men who negotiated a higher salary (Bowles et al., 2005).

- **Attitude towards gender bias evidence**: A 2015 study found that men evaluated gender bias research less favorably than women, and this was especially prominent among male faculty in STEM fields (Handley et al, 2015).

Race & Ethnicity Bias:

- **Innate Talent:** A 2015 study found that women and minorities (particularly African Americans) were underrepresented in fields where raw innate talent and brilliance were considered a requirement for success in those fields, since they are stereotyped as not possessing such brilliance. This bias was reduced for Asians. (Leslie et al, 2015). Another study found that words like "brilliant" and "genius" in online teaching evaluations were significantly lower for women and African Americans (Storage et al, 2016).
- **Grant Awards:** A 2011 study commissioned by NIH revealed that black Ph.D. scientists were far less likely to receive NIH funding for a research idea than a white scientist from a similar institution with the same research record. A smaller gap was also found for Asians, though this gap disappeared when only US citizens were included. (Ginther et al., 2011)
- **Callback for Interviews**: A study using fictitious resumes found a significant racial gap in the rate of callbacks for interviews. Resumes with traditionally white names such as Emily and Greg elicited 50% more callbacks than similar resumes with black/ethnic names such as Lakisha and Jamal. Also, a higher quality resume elicited 30% more callbacks for whites but a far smaller increase for blacks. (Bertrand and Mullainathan, 2003).
- **Verbal Skills**: In a study showing that holding stereotypes tends to shift the standards for judging an individual or group, researchers found that when asked to rate verbal skills, evaluators rated the skills lower if they were told that an African American provided the definitions for certain words than if they were told that a white person provided them (Biernat et al., 1994).
- **Treatment of Ambiguity**: A 2000 study found that when a candidate's qualifications for a position were ambiguous, bias against blacks was stronger than bias against equally qualified whites. (Dovidio and Gaertner, 2000).

Section II: Guidelines for Search Committees[1]

Pool Development:

- **Search Definition**: Broad search definitions produce diverse applicant pools.[2] The description should not just encourage women and minorities to apply. More assertive

[1] **Detailed guidelines on conducting a diverse search can be found in the dossier, *Guidelines for LDEO Search Committees*, of which this document is one component.**

[2] *See, e.g.,* CU Presidential Advisory Committee on Diversity Initiatives Working Paper, 2005; Smith et al., 2004.

language could include, for example, "The search committee is especially interested in qualified candidates who can contribute, through their research, teaching, and / or service, to the diversity and excellence of the academic community."[3]

- **Expansion of Sources:** Expanded recruitment sources also produce diverse applicant pools. Active search committees will identify and contact graduate programs with high numbers of women and minority Ph.D. candidates and utilize databases and fellowship directories that identify outstanding and diverse candidates.
- **Search Committee Composition**: Inclusion of women and minorities as search committee members is strongly encouraged as diversity within the committee leads to a broader range of perspectives, attitudes and evaluation criteria, thereby promoting a more diverse search.

Candidate Selection:

- **Multiple Lists:** Selection committees should make multiple lists of candidates, using different criteria for each list. This will remind search committees that many different talents are important to science and candidates will rank differently on each criteria (Georgi, 2000).
- **Evaluation Form:** Use a candidate evaluation form. Discuss these forms in search committee meetings. Rater accountability has been shown to increase the accuracy and objectivity of ratings (Mero & Motowidlo, 1995). An example of a candidate evaluation form included in the appendix to this document – search committees should feel free to adapt it to their needs.
- **Group Discussion:** Encourage a discussion format that requires contributions from all members. Asking each member of the committee to comment on a candidate ensures that a vocal minority does not dominate the discussion. This format also provides an incentive for everyone to "do their homework."

[3] Excerpt from the University of Michigan Faculty Handbook, 2004-2005

Appendix

Candidate Evaluation Form for Search Committees

Adapted from the University of Michigan ADVANCE Program Candidate Tool

The following form is meant as a template to evaluate job candidates at Lamont. Search committees may modify it as necessary depending on the rank, title and unique requirements of the position being considered.

Candidate's Name:

Points to consider when evaluating the candidate:

☐ Candidate's job talk
☐ CV
☐ List of publications
☐ Record of federal grant funding received
☐ Proposals written and funded
☐ Letters of recommendation
☐ Scientific merit
☐ Fit at Lamont, with respect to the LDEO Strategic Plan
☐ Outreach and education efforts
☐ Teaching ability, if applicable
☐ Other (e.g. meeting with candidate; AGU talk)

Please rate the candidate on each of the following:	Excellent	Good	Neutral	Fair	Poor	Unable to judge
Potential for (or evidence of) scholarly impact						
Potential for (or evidence of) research productivity						
Potential for (or evidence of) research funding						
Potential for (or evidence of) collaboration						
Fit with department's priorities						
Potential or demonstrated ability to make positive contribution to department's climate						
Potential or demonstrated ability to teach and supervise students						
Potential (or demonstrated ability) to be a conscientious university community member						

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